TREND STUDY 1-10-96

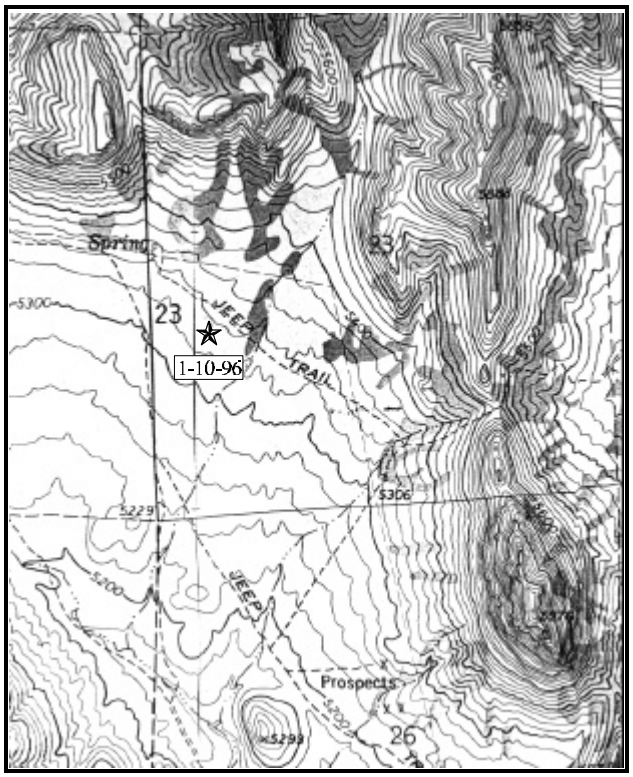
Study site name: Kilgore Basin . Range type: Black sagebrush .

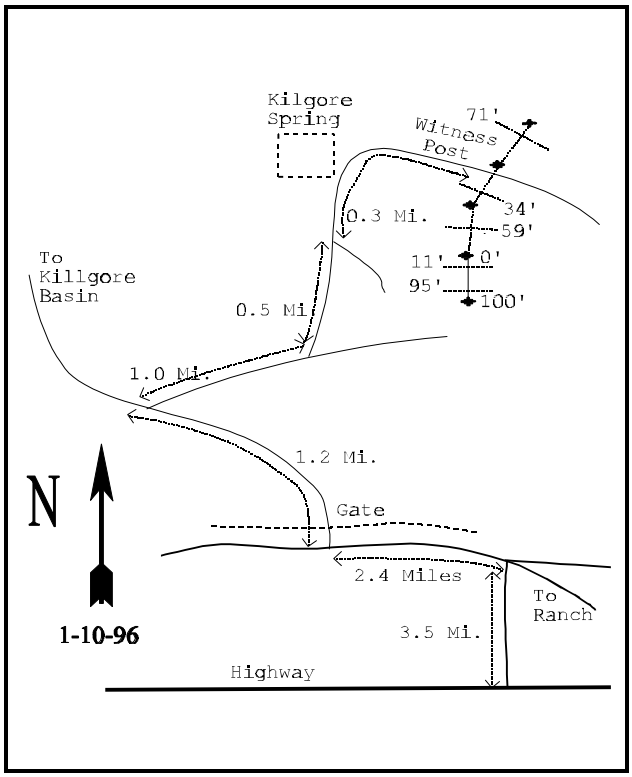
Compass bearing: frequency baseline 155 degrees.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) Line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Traveling west on U-30 past Grouse Creek junction, proceed 0.6 miles past mile marker 6 and turn right. Travel 3.5 miles to a dryland farm. Continue north on road thru fields. At north edge of field turn left and proceed about 1.0 mile to intersection. Turn left at the intersection and travel 2.4 miles. Turn right and travel 1.2 miles (just after you turn right you will go through a gate). Turn right and continue 1.0 miles. Turn left and proceed 0.5 miles where there will be a road on the right. Continue straight for 0.3 miles passing Kilgore Spring to a witness post on the south side of the road. Walk 36 paces from the witness post on a bearing of 163 degrees true to the 0-foot stake of the frequency baseline. This stake marked by a red browse tag, #7910. Baseline bearing is 155 degrees true.





Map Name: Kilgore Basin Diagrammatic Sketch

Township 9N , Range 19N , Section 23 , UTM COOR: 2-49-604E 45-96-736N

DISCUSSION

Trend Study No. 1-10

This study, located west of Grouse Creek in Kilgore Basin, samples critical deer winter range. Terrain ranges from nearly level to gentle south facing slopes. Elevation is approximately 5,330 feet. The study site lies within a large basin surrounded by low hills that are nearly barren of tree cover. The sampled range type is a uniform, low-growing, evenly spaced stand of black sagebrush. Shrub interspecies are essentially barren of other vegetation. Within the basin, plant diversity is minimal. The bulk of the area is occupied by the black sagebrush type. The only variation is in small swales where the deeper rooted Wyoming and basin big sagebrush predominates along with a few isolated patches of juniper trees. This area is within the Kilgore allotment. It is used by 268 cattle and 30 horses during the winter (11/01 to 04/30). Deer pellet groups are moderately high with a quadrat frequency of 17%. Some elk sign was also noted.

Soil is alluvially deposited and has a long history of steady erosion. The bulk of the ground surface is occupied by rock and erosion pavement. Apart from shrub crowns there is very little aerial cover. Erosion continues at a slow but steady rate in spite of the gentle terrain. Plant pedestaling, exposed plant roots, and exposed lichen lines on rocks are all common. Soil erosion, however, has not seriously effected reproduction of black sagebrush, the key browse species.

Black sagebrush dominates the site with scattered amounts of narrowleaf low rabbitbrush, shadscale saltbush, winterfat, and spiny hopsage. All show evidence of use, although intensity is markedly greater on black sagebrush and winterfat. The population of black sagebrush appear relatively stable, but show a slight predominance of decadent plants as opposed to young plants and seedlings. Density of black sagebrush was estimated at 15,932 plants/acre in 1984. Utilization was heavy on 93% of the population and percent decadency was relatively high at 46%. During the 1990 reading, population density was estimated at 16,199 plants/acre. Utilization was more moderate with heavy use reported on 36% of the population. Percent decadency increased to 66% and 19% of those shrubs were classified as dying. Extended drought was responsible for most of the noticeable increase in percent decadency. By 1996, density declined to 13,600 plants/acre. Heavy use was found on only 12% of the population and percent decadency declined to 26%. There continues to be large numbers of seedlings and young which are more than adequate to maintain the population.

Understory plants are sparsely distributed and have little species diversity. Total herbaceous cover equals less than 4% cover. Most are low-growing xeric species with low palatability. The most prominent grasses include bottlebrush squirreltail, Sandberg bluegrass, and Indian ricegrass. Cheatgrass is present but rather rare. Forbs include longleaf phlox, milkvetch and rockcress. Livestock use, which includes horses, has had a negative effect on herbaceous density and composition.

1984 TREND ASSESSMENT

Nearly all of the indicators used to evaluate soil trend suggest a declining condition. However, it appears at least superficially that widespread sheet erosion has been occurring for a long time and has not greatly affected the plant community. This is a very dry site with low potential for producing grass or forbs under even the best of conditions. The current plant community appears quite stable. Black sagebrush should continue to dominate the site, even though the population is subject to heavy utilization.

1990 TREND ASSESSMENT

The relatively small statured adult population (excluding seedlings) of black sagebrush on this site is increasing. The high percentage of decadence is normal for high density stands like this one. Percent decadency has gone from 47% to 66%. This would be expected with extended drought. Sagebrush canopy cover averages about 21%. These shrubs were severely hedged in the past, but recently there has been lighter utilization and improved growth forms. The majority of the mature plants have normal vigor. Nested frequency of bottlebrush squirreltail declined and the other two grasses were not sampled. All forbs except hoods phlox decreased in sum of nested and quadrat frequencies. The majority of the ground cover is rock and pavement, with the current rate of erosion appearing slow.

TREND ASSESSMENT
soil - stable to slightly up but in poor condition with more than 40% cover for rock and pavement
browse - stable to slightly down due to moderately heavy use accompanied by prolonged drought which has caused poor vigor and high decadency
herbaceous understory - down and depleted, almost nonexistent

1996 TREND ASSESSMENT

Soil conditions are still poor, but trend is up due to a decrease in percent bare ground (17% to 9%) and an increase in litter cover (14% to 20%). Trend for black sagebrush is up. Total density has declined from 16,199 plants/acre to 13,600, but the number of mature plants has doubled while the percentage of decadent plants has decreased. Utilization is more moderate and vigor good on all but a few of the decadent plants. The herbaceous understory is still depleted, yet sum of nested frequency for perennial grasses and forbs has increased.

TREND ASSESSMENT
soil - up but in poor condition, more than 40% rock and pavement cover
browse - up
herbaceous understory - up but still depleted contributing less than 4% total cover

HERBACEOUS TRENDS --
Herd unit 01 , Study no: 10

Type	Species	Nested Frequency '84	'90	'96	Quadrat Frequency '84	'90	'96	Average Cover % '96
G	Bromus tectorum (a)	-	-	53	-	-	20	.20
G	Oryzopsis hymenoides	2	-	5	1	-	4	.31
G	Poa secunda	a10	b-	a22	6	-	9	.30
G	Sitanion hystrix	ab73	a50	b89	35	27	42	1.02
Total for Grasses		85	50	169	42	27	75	1.83
F	Allium spp.	a8	b-	b-	4	-	-	-
F	Arabis drummondi	a12	b-	b-	5	-	-	-
F	Astragalus beckwithii	a7	a1	b29	3	1	16	.42
F	Cruciferae (a)	-	-	11	-	-	7	.03
F	Cryptantha spp.	a-	a-	b20	-	-	10	.05
F	Gilia spp. (a)	-	-	9	-	-	6	.03

Type	Species	Nested Frequency '84	'90	'96	Quadrat Frequency '84	'90	'96	Average Cover % '96
F	Lappula occidentalis (a)	-	-	11	-	-	3	.04
F	Navarretia intertexta (a)	-	-	19	-	-	9	.04
F	Phlox hoodii	$_{a}$51	$_{b}$87	$_{ab}$61	26	36	26	.65
F	Phlox longifolia	$_{a}$80	$_{b}$57	$_{a}$94	39	26	42	.58
F	Townsendia spp.	-	-	3	-	-	1	.03
Total for Forbs		158	145	257	77	63	120	1.88

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 01 , Study no: 10

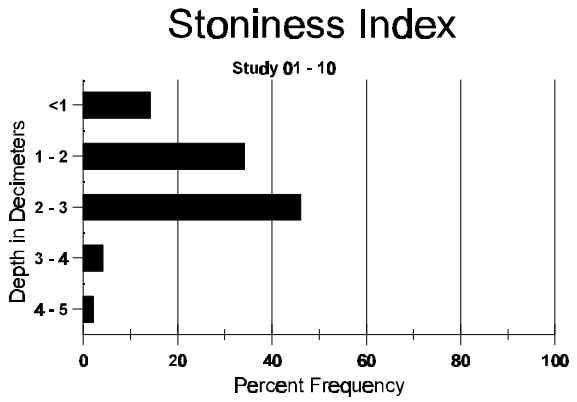
Type	Species	Strip Frequency '96	Average Cover % '96
B	Artemisia nova	100	24.95
B	Artemisia tridentata wyomingensis	3	.03
B	Atriplex confertifolia	18	1.43
B	Chrysothamnus viscidiflorus stenophyllus	76	5.37
B	Ephedra nevadensis	2	.03
B	Grayia spinosa	3	.30
B	Juniperus osteosperma	1	.15
B	Kochia americana	2	-
B	Opuntia fragilis	7	.00
Total for Browse		212	32.27

BASIC COVER --
Herd unit 01 , Study no: 10

Cover Type	Nested Frequency '96	Average Cover % '84	'90	'96
Vegetation	296	0	5.50	36.16
Rock	236	11.00	6.75	11.82
Pavement	347	40.00	55.25	28.72
Litter	357	21.50	13.75	19.58
Cryptogams	165	1.50	1.50	1.84
Bare Ground	252	26.00	17.25	9.20

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 10

Effective rooting depth (inches)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.4	65.0 (10.8)	8.1	48.9	27.1	24.0	1.2	6.3	444.8	.6



PELLET GROUP FREQUENCY --
Herd unit 01 , Study no: 10

Type	Quadrat Frequency '96
Rabbit	2
Elk	1
Deer	17
Cattle	1

BROWSE CHARACTERISTICS --
Herd unit 01 , Study no: 10

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	84	27	-	-	-	-	-	-	-	-	26	-	1	-	1800			27
	90	14	-	-	-	-	-	-	-	-	14	-	-	-	933			14
	96	28	-	-	-	-	-	-	-	-	28	-	-	-	560			28
Y	84	15	-	-	-	-	-	-	-	-	15	-	-	-	1000			15
	90	18	1	4	-	-	-	-	-	-	23	-	-	-	1533			23
	96	56	15	9	3	-	-	-	-	-	83	-	-	-	1660			83
M	84	-	-	112	-	-	-	-	-	-	86	-	26	-	7466	12	21	112
	90	10	23	26	-	-	-	-	-	-	51	-	7	1	3933	9	17	59
	96	106	185	48	6	67	5	-	-	-	417	-	-	-	8340	8	20	417
D	84	1	-	111	-	-	-	-	-	-	62	-	50	-	7466			112
	90	55	49	57	-	-	-	-	-	-	98	2	31	30	10733			161
	96	60	54	8	-	48	10	-	-	-	173	-	-	7	3600			180
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	880			44
Total Plants/Acre (excluding Dead & Seedlings)													'84		15932	Dec:		47%
													'90		16199			66%
													'96		13600			26%
Artemisia tridentata wyomingensis																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	19	23	1
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	2	-	-	1	-	-	-	3	-	-	-	60			3
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
Total Plants/Acre (excluding Dead & Seedlings)													'84		0	Dec:		0%
													'90		0			0%
													'96		80			75%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Atriplex confertifolia																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	96	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
M	84	2	3	-	-	-	-	-	-	-	5	-	-	-	333	12	12	5
	90	6	-	-	-	-	-	-	-	-	5	-	-	1	400	7	10	6
	96	10	8	3	1	7	-	-	-	-	29	-	-	-	580	10	14	29
D	84	1	11	3	-	-	-	-	-	-	11	-	4	-	1000			15
	90	11	-	2	-	-	-	-	-	-	9	-	-	4	866			13
	96	-	-	-	-	1	-	-	-	-	1	-	-	-	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
Total Plants/Acre (excluding Dead & Seedlings)													'84		1399	Dec:		71%
													'90		1399			62%
													'96		740			3%
Chrysothamnus viscidiflorus stenophyllus																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	25	-	-	-	-	-	-	-	-	25	-	-	-	500			25
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	90	5	5	-	-	-	-	-	-	-	10	-	-	-	666			10
	96	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4
M	84	9	12	3	-	-	-	-	-	-	22	-	2	-	1600	6	7	24
	90	33	5	-	1	-	-	-	-	-	39	-	-	-	2600	7	11	39
	96	208	5	-	11	1	-	-	-	-	225	-	-	-	4500	9	15	225
D	84	5	16	2	-	-	-	-	-	-	18	-	5	-	1533			23
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
Total Plants/Acre (excluding Dead & Seedlings)													'84		3199	Dec:		48%
													'90		3399			4%
													'96		4620			1%
Ephedra nevadensis																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	2	-	-	-	-	-	-	2	-	-	-	40	9	13	2
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	1	-	-	-	-	1	-	-	-	20			1
Total Plants/Acre (excluding Dead & Seedlings)													'84		0	Dec:		0%
													'90		0			0%
													'96		60			33%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Grayia spinosa																		
M	84	-	-	1	-	-	-	-	-	-	-	-	1	-	66	16	4	1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	2	-	-	-	-	-	-	-	2	-	-	-	40	15	33	2
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	2	-	-	1	-	-	-	-	-	-	-	3	60			3
Total Plants/Acre (excluding Dead & Seedlings)													'84		66	Dec:		0%
													'90		0			0%
													'96		100			60%
Juniperus osteosperma																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Total Plants/Acre (excluding Dead & Seedlings)													'84		0	Dec:		-
													'90		0			-
													'96		20			-
Kochia americana																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	2	4	2
Total Plants/Acre (excluding Dead & Seedlings)													'84		0	Dec:		-
													'90		0			-
													'96		40			-
Opuntia fragilis																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66	4	4	1
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66	3	4	1
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80	4	8	4
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Total Plants/Acre (excluding Dead & Seedlings)													'84		66	Dec:		0%
													'90		132			0%
													'96		140			14%